Target Generation Facility
(TGF)
Rbx Control Users Guide
1st Edition

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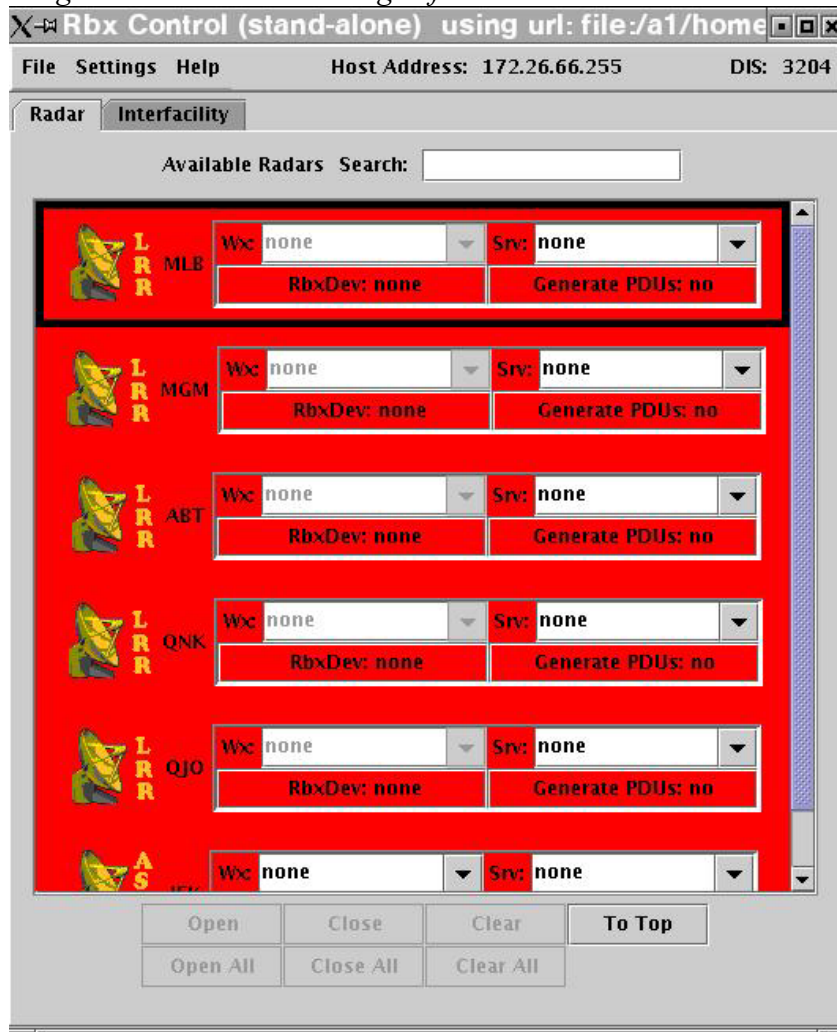**Mays Landing, NJ 08330**
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1   Overview

This document details the functions and features of the Rbx Control tool – a GUI designed to assist the user in sending initialization messages to a rbx for radar simulation.

Diagram 1 – A standard image of the Rbx Control:

1.1   What the Rbx Control Is.

The Rbx Control centers around a 'rbx', and one will be required for the Rbx Control GUI to perform its functions properly. What is a rbx? It stands for "radar box"; a machine containing several cards (rbx devices) dedicated to emulating radar or interfacility upon it. The Rbx Control GUI itself is designed to represent an open message (or initialization message if you'd rather) that can be sent to one of those rbx devices. Each radar or interfacility displayed represents such a message; containing radar/interfacility specific data and user defined options to initialize a rbx device with.

1.2 What the Rbx Control is not.

I can't stress this enough – the Rbx Control is NOT an actual radar or interfacility (although it does contain the information they use once the radar/interfacility xml files are loaded). It represents the data sent TO the software which does the emulation. Once a radar or interfacility has been "opened" (think of it as opening a communications port, since that's what it is) it must be "closed" if any changes are to be made to the radar/interfacility options or representations.

1 -The Rbx Control does NOT monitor the status of radar/interfacility – it only handles the initialization of them on the rbx devices simulating software.

2- It does not monitor the rbx devices after they are queried (they must be queried again), nor does it monitor the status of each rbx itself.

3- It does not affect the targets or handoff messages themselves beyond providing the DIS port they are being broadcast too, and the scan-rate of the targets on the radar.

4- It does not handle any of the network connections between labs or the bytex.

1.3 How does the Rbx Control do what it does?

The user is able to configure radars, interfacility sites, and other options through one of the Control displays. These can be broken into three sections:
1- The Rbx Control Menu – Here the user can load/save radar and interfacility configurations and xml files, change the DIS port and rbx host address, load generic pamri devices, add radars and create interfacility sites.
2- The Radar Control – Here the user can assign a rbx device (see section 3.5) to specific radar. After assignment the user can then open the radar to begin simulating it.
3- The Interfacility Control – Here the user can assign a rbx device to specific rbx or simulated interfacility sites. After assignment the user can then open the interfacility site to begin simulating it.

2   Rbx Control Menu

2.1   *Displayed information*

The Rbx Control itself contains several helpful pieces of information and options outside of the radar/interfacility control displays - three pieces of information conveyed directly on the top of the rbx control; the title, host address, and DIS port, and several options available through the menu bar.

2.1.1 Title

You'll note that the title of the rbx control GUI ("Rbx Control") is displayed at the top. This is followed by the words 'stand-alone' or 'embedded' which indicate if the rbx control has been initialized through an embedded or stand-alone Java VM.

    1- "Embedded" means the rbx control GUI will terminate its process if the program which invoked it ends its Java Virtual Machine.

    2- "Stand-alone" means the rbx control Java Virtual Machine will remain active until the rbx control VM (Virtual Machine) itself is brought down.

Example – The rbx control is displayed through another program (the ECO), but a stand-alone VM was *not* requested during rbx control initialization. If the program (the ECO) which created the rbx control GUI is brought down the rbx control will be brought down as well. If the program which creates the rbx control GUI invokes a stand-alone VM instead then even if the invoking program is brought down (the ECO) the rbx control GUI will not be.

After the 'embedded' or 'stand-alone' text is the name of the file the rbx control is using to represent the radar or interfacility currently displayed.

2.1.2 Host Address

This is the IP address the rbx control will use to query for rbx hosts. (See section 3.1.1, section 4.2.1 and section 4.4.1). It is **NOT** the address at which the rbx control will send open/close messages to initialize/de-allocate a rbx device!

2.1.3 DIS:

This is the current port the rbx control will use to send open/close messages on and feed radar/interfacility through. *NOTE: At the time of this writing DIS ports 3201 – 3212, and 3221 – 3240 are the only supported DIS ports.*

2.2   The File Menu

The file menu is where the radar, facility, and configuration files are loaded and saved

Diagram 2 - An image of this menu can be found below
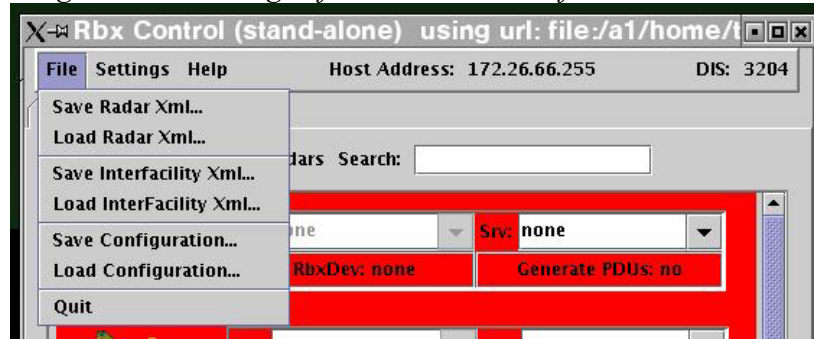
2.2.1 Save Radar Xml

Selecting this option allows the user to save the radar that are listed in the radar control as an xml file. **ONLY** radar listed in the radar control are saved; any rbx device, weather file, or surveillance file assignments are **not** saved.

2.2.2 Load Radar Xml

Selecting this option loads an xml file containing a radar representation into the radar control. If no radars can be loaded (there aren't any in the file which match the radar xsd template used to identify them) then nothing is loaded into the radar control.

2.2.3 Save Interfacility Xml

This option allows the user to save the interfacility which are listed in the interfacility control as an xml file. **ONLY** interfacility listed in the interfacility control are saved; any rbx device assignments or simulated site options are **not** saved.

2.2.4 Load Interfacility Xml

This option loads an xml file containing an interfacility representation into the interfacility control. If no interfacility can be loaded (there aren't any in the file which match the facility xsd template used to identify them) then nothing is loaded into the interfacility control.

2.2.5 Save Configuration

This option allows the user to save the current configuration assigned to radar/interfacility within the rbx control to a file (default extension is 'rcfg'). The configuration file stores the xml files used to represent the radar/interfacility as well – loading them before the changes are applied when reloaded.

2.2.6 Load Configuration

This option loads a configuration file (default extension is 'rcfg'). The loading algorithm begins by loading the radar/interfacility xml files first (if the files have been altered by changing which radar are present and/or their statistics the configuration files may load incorrectly) then applying the configuration changes.

2.3   Settings Menu

Here the user can alter the DIS broadcast port, the Host Address the rbx control uses to query for rbx devices, load a generic device file, create interfacility, and add radar from the known radar list.

Diagram 3 - An image of this menu can be found below:
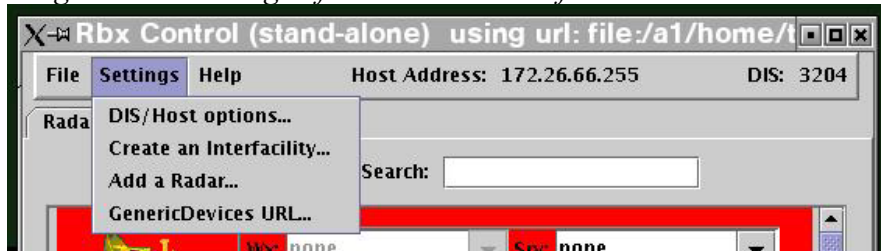
2.3.1 DIS/Host options

The open and close messages are sent to the rbxs on a particular DIS port, which is then used to convey all the radar/interfacility messages as well. Here the user may specify which DIS port the rbx control will use for it's open/close messaging system. *NOTE: At the time of this writing DIS ports 3201-3212, and 3221 – 3240 are supported.*

Diagram 4 - a picture of the DIS/Host options window.
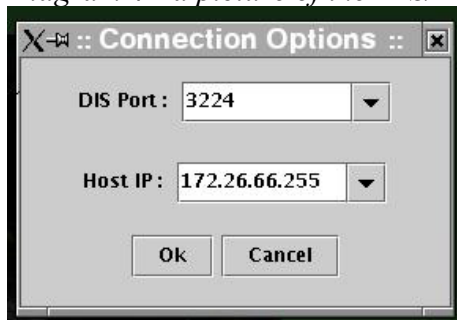
The rbx control queries for rbx hosts at the 'host address' displayed when a 'RbxDev' button is pressed on a radar or interfacility display (See sections 3.1 and 4.1). The user may change the IP address queried by changing the host address here.

2.3.2 Create an interfacility

Selecting this option from the settings drop down will display a GUI which enables the user to create an interfacility site – a simulated site with one or more rbx sites associated with it for interfacility communications.

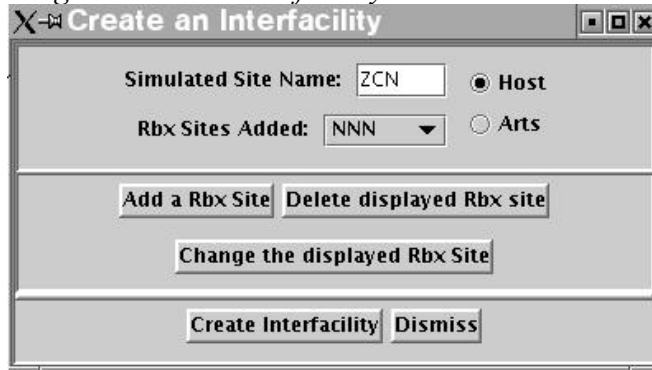*Diagram 5 – The Interfacility Creation Panel*

The creation GUI can be broken into two parts – the simulated site creation display, and the rbx site creation display. These parts are detailed below –

Simulated Site Creation Display –
This part of the creation GUI deals with the simulated site portion of interfacility communications (see section 4.2). The buttons on this segment of the GUI relate to the simulated site name, if it is an Arts or a Host site, and the rbx sites it will communicate with.

1- Simulated Site Name – is the name of the simulated site; the interfacility site the user wishes to be. There **MUST** be a simulated site for interfacility communications to function.
2- Host/Arts radio buttons – relate to whether the simulated site should be a Host or an Arts type.
3- Rbx Sites Added – is a drop box containing the id's of rbx sites the user wishes to communicate with. These are the communicating sites to the simulated site - there **MUST** be at least one defined for interfacility communications to function correctly.

Rbx Site Creation Display –
This part of the creation GUI deals with the rbx site portion of interfacility communications (see section 4.4). It represents a site the user wishes to communicate with for interfacility communications.

1- Add a rbx site – pressing this button presents a pop up (see below) for the user to enter the three letter identifier for the rbx site, and decide if the site will be a Host or Arts via two radio buttons. It is added to the simulated site when the "Add the Rbx Site" button is pressed.
2- Delete displayed rbx site – pressing this button will remove the displayed rbx site from the simulated site's list of rbx sites.
3- Change displayed rbx site – pressing this button allows the user to rename the rbx site and/or change the site type (Host/Arts).

Diagram 6 – The Rbx Site Creation Display is shown below.

Creation or Dismiss Segment –
Create interfacility, and/or dismiss the GUI – those options are here.

1 – Create Interfacility – pressing this button will create an interfacility representation with the defined simulated and rbx site(s) and place them into the interfacility control. If the simulated site or one of the rbx sites already exist within the rbx control the interfacility can not be added – make sure all interfacility sites are defined only once. Lastly, the user will be prompted to save a facility xml file for the new representation upon creation.
2 – Dismiss – Exists the facility creation process.

2.3.3 Add a Radar

The user can add radar from a master radar list if they need to mix and match radars not found within a radar xml file. (All enroute center radars and some terminal radar are provided via this master file – which is stored in the /tgf/xml/radar directory).

Diagram 7 – The Add a Radar Display can be seen below
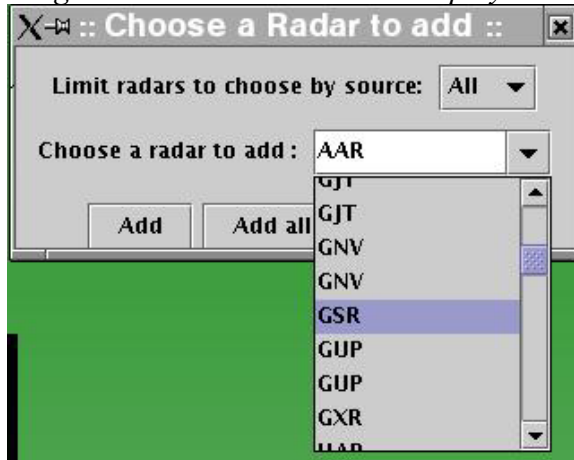
To add radar, simply select the name from the list. Some radar are present multiple times in the list, this means multiple centers claim to possess them. To ensure that a particular site representation is loaded use the "Limit radars to choose by source" drop box to confine the radars displayed to a particular site.

> 1- "Add" will add the selected radar into the Radar Control.
> 2- "Add all" will add all radars in the radar list to the Radar Control.
> 3- "Dismiss" will end the radar adding process.

2.3.4 Generic Device URL

With the introduction of NIB (NAS In the Box) it's possible to have rbx devices that aren't physical cards, but pamri's instead. To take advantage of this capability (and use those devices) the user can load a generic device file – an xml file containing the names of the HIDS and the rbxs they are on. *Note: the rbxs themselves do not have knowledge of these devices, as they aren't physically present, so they are "added" to the query when the RbxDev button is pressed, they are not truly seen on that rbx – the user is claiming the rbx has them.*

3 Radar Control

The radar control contains a list of radar the user has loaded into the rbx control. (Accomplished through either loading a radar xml file, a configuration file, or adding radar through the "add a radar" option.) It provides the utilities required to simulate one or more of the displayed radar.

3.1 Radar Control Display

Diagram8 – The radar control can be seen below -
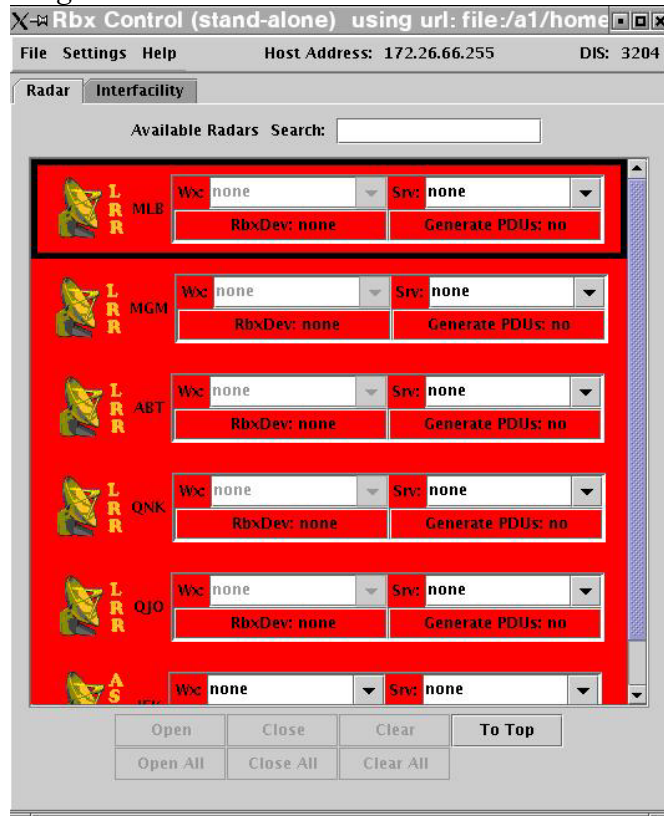
Radar within the radar control have six features associated with them. (Selecting one of the radar will outline it with a black border, indicating that it is the currently selected one.)

1- Radar Type – this value is defined in the radar xml file, but displayed here as well to show the user the type of radar it is. Allowed radar types are ARSR, ASR9, ASR11, and RSE radars. (ARSR, ASR9, and ASR11 radars have those words displayed vertically, while RSE radars are displayed by a maple leaf (Canadian radar)).

2- Radar Name – The unique radar name is displayed after the radar type.

3- Wx – This drop box contains a list of pre-recorded weather files the user can select to display weather on the controller's scopes. As enroute radar systems do not have a fourth feed for weather data; thus ARSR and RSE radar's will not have this option enabled.
4- Srv – Same as the Wx box. This drop box contains a list of pre-recorded surveillance files the user can select to display weather on the controller's scopes. As this represents the third line into radar, all radar possess this option.
5- Generate PDU's – Clicking this button toggles whether radar PDU's will be dumped onto the wire (TGF's local net) in addition to going through the bytex.
6- RbxDev – This button displays the currently assigned rbx device the radar will use (or is currently using) to simulate this radar. Pressing the button will cause the rbx control to query any machines located at the displayed host address for rbx hosts – displaying a GUI (see 3.1.1) displaying any devices usable as radar transmitters at that address. The user may select a rbx device from this display and assign it to the selected radar. When the user has done so the RbxDev button will indicate which rbx device has been assigned to it. The results of a successful query can be seen in diagram 10.

3.1.1 Radar Device Transmitter Window –

This window displays the rbx devices found at the host address: cards designated to simulate a radar transmitter. The "hosts" (machines containing these devices) can be seen on the left hand side of the panel. (Example: rbx1, rbx4). The devices themselves are displayed as selectable buttons on the display. (Example: rbx1-tx0, rbx3-tx4 and so on). Selecting a device button represents the action of assigning that rbx device to the selected radar within the rbx control.

Diagram 9 – A picture of the radar device transmitter window.
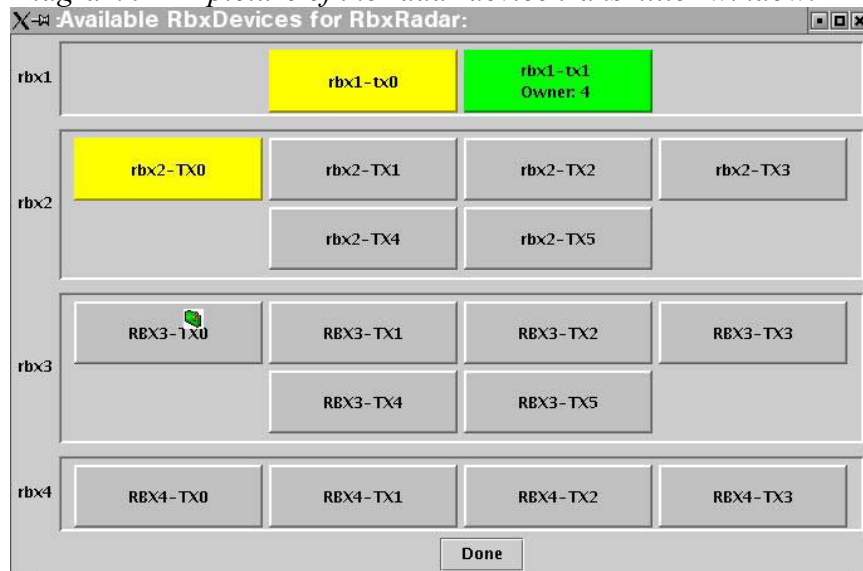
Colors on the radar device transmitter window –

The buttons also have three colors, as can be seen in the above illustration. Each color has a different meaning, as seen below:

1- Gray – means "unassigned". The rbx device is currently not assigned to any rbx control radar, nor is it in use by another process on the actual rbx (at the time of the query).

2- Yellow – means "assigned". The rbx device is assigned to a radar within the rbx control, but has not been initialized yet. The device will not allow more then one radar to be assigned to the rbx device it represents. If a different device needs to be assigned to the selected radar simply press a different device button to do so. If a different radar needs the assigned device select the radar which currently is assigned the rbx device, select 'clear' from the state display below the radar list (see section 3.3), and make the assignment to the desired radar.

3- Green – means the rbx device is currently in use on the rbx. A 'owner' will also be present indicating the DIS port or process number running on that device. The device button will not allow the device it represents to be assigned to another radar until the device is closed.

Other features –
Lastly, by right clicking on a device button the user can force the rbx device so clicked on to close. To do this, the user must have the same DIS port as the owner of the device.

3.2   Radar Display States

Diagram 10 - A Diagram of the different radar states can be seen below –

Radar displayed in the radar control needs a rbx device assigned to it *if* it is to be simulated. Having a rbx device assigned to a radar representation does not mean the radar has been initialized however, only that it is ready to be so. To this end the radars displayed are color coded to indicate which state they are in; not ready, ready, and opened (initialized).

1- Red – indicates that the radar is not ready to be opened for simulation; it has no rbx device assigned to it. While in this state the user may change any of the radars fields.

2- Yellow – indicates that the radar is ready to be opened; it has a rbx device assigned to it, but that rbx device has not been initialized with this radar representation yet. Changes are still allowed to any of the radars fields.

3- Green – indicates the radar has been opened, and that the rbx device assigned to it has initialized with this radars representation. No changes to any of the radars fields are allowed at this time; the radar must be closed if changes are to be made to it.

3.3   Radar State buttons

On the bottom of the radar control there are seven buttons used to change the state of the displayed radars. Each one is detailed below:

1- Open – 'opens' the selected radar. It initializes the rbx device assigned to it with the current radar representation. If the selected radar does not have a rbx device assigned to it, or is already opened this button will not be enabled.
2- Close – 'closes' the selected radar. If frees the rbx device assigned to it. If the selected radar does not have a rbx device, or if the device assigned to it is not open, then this button will not be enabled.
3- Clear – 'clears' the selected radar. It resets the selected radar of its fields, restoring the default values (no weather or surveillance files, force PDU = off, and no rbx device assigned) for the radar. If no changes to the default values have been made, or the radar is open this button will not be enabled.
4- Open All – Functions the same as 'open' does, but all radars which have a rbx device assigned to them are opened. A radar need not be selected for this button to be enabled, but there must be at least one non-open, but ready radar present.
5- Close All – Functions the same as 'close' does, but all radar which have a opened rbx device are closed. A radar need not be selected for this button to be enabled, but there must be at least one open radar present.
6- Clear All – Functions the same as 'clear' does, but all altered non-open radar are reverted to their default values. A radar need not be selected for this button to be enabled, but there must be at least one altered, non-open radar present.
7- To Top – This doesn't effect the state of the radars so much as the state of the list. Pressing it bumps all opened or ready to be opened radars to the top of the radar control list for easier viewing. Purely an aesthetic thing I assure you.

3.4 Searching for Radar

This feature is located at the top of the radar control – allowing the user to look for radar within the radar control list. If the radar entered is found that radar is selected for the user with the list centering on it. If the radar entered is not found a dialog appears letting the user know it did not find it. The user can search for a radar even if they know only a portion of its name; it will continue to select radars as it find matches within the list. Lastly, the search is always executed in a top-down orientation.

3.5 Deleting radar

It is possible to delete radar from the radar control list by right-clicking on the radar to remove. Doing so displays a pop-up with the words "remove this radar" in it, selecting that option removes the radar from the radar control. Any radar below it are bumped up in the list. Open radar can not be removed, they must be closed first. Any radar with an assigned rbx device is cleared before they are removed.

4   Interfacility Control

The interfacility control contains a list of interfacility the user has loaded into the rbx control. (Accomplished through either loading an interfacility xml file, a configuration file, or creating an interfacility.) It provides the utilities required to simulate one or more of the displayed interfacility sites.

4.1   Interfacility Control Display

Each interfacility site is represented by two parts; a simulated site, and one or more rbx sites. The simulated site is the site the user wishes to be, while the sites the user wishes to communicate with are called rbx sites (as they must have a rbx device allocated to them for that purpose). We'll deal with the simulated site first.

Diagram 11 – the Interfacility Control portion of the Rbx Control can be seen below with a rbx site (NNN) selected.
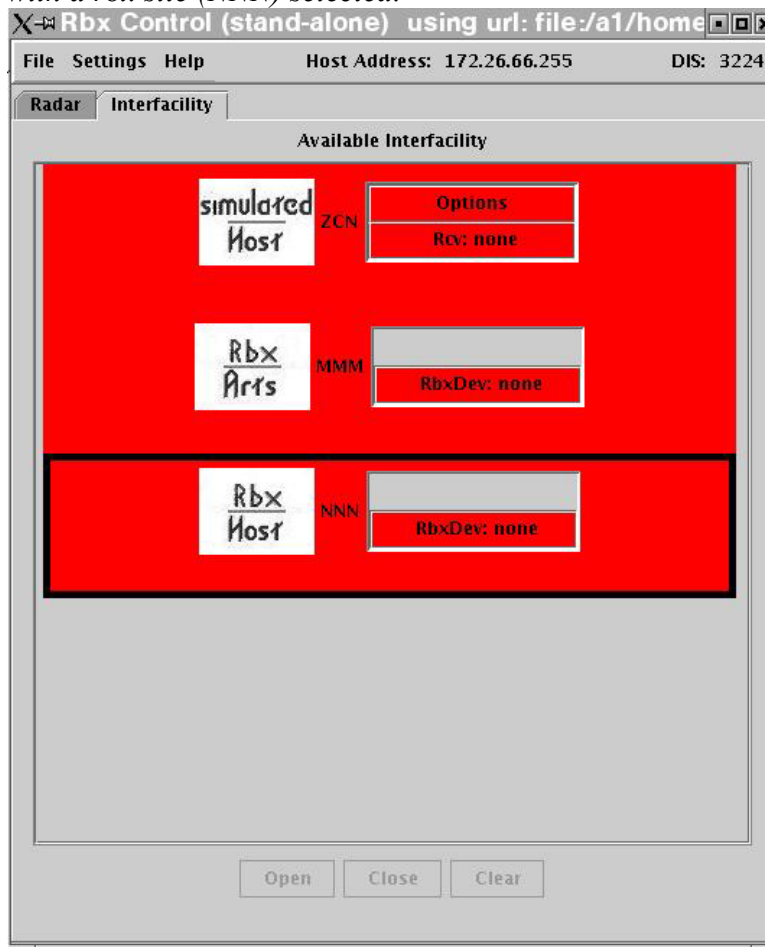
4.2   Simulated Arts/Host Display

Each simulated Arts/Host within the interfacility control has four features associated with it.

1- Interfacility Type – this is the type of interfacility the simulated site is: either an Arts, or a Host site. This information is displayed in appropriate words below the 'simulated' part.
2- Interfacility ID – this is the unique three letter identifier for the facility.
3- Options – displays which features should be used when the interfacility is opened.
4- RcvDev – this queries any machines found at the host address for rbx devices which can be used as facility receivers – displaying an interfacility receiver device window. (See below).

4.2.1 Interfacility Receiver Device Window

This window displays the rbx devices found at the host address which can be used to simulate a radar receiver for interfacility communications. The 'hosts' they are on (machines which contain the devices) can be seen on the left hand side of the display (notice rbx1, rbx4), while the devices themselves appear as selectable buttons displaying the device name on them (examples are RBX4-RX0, or RBX1-RX-0). Pressing a device button represents the action of assigning that rbx device to the selected simulated Arts/Host site.

Diagram 12 – Below is a picture of the Rbx Receiver Device Display, note that one of the receivers is blue? It's been assigned to a simulated site (see below).

Colors on the Rbx Receiver Device Display -
The buttons can also have two colors, as can be seen in the above illustration. Each color has a different meaning, as seen below:
1 – Gray – means "unassigned". The rbx device is currently not assigned to any rbx control interfacility, nor is it in use by another process on the actual rbx (at the time of the query).
2 – Blue – means "assigned". It indicates that the device has been assigned to a simulated site within the interfacility control. Users *can* have multiple simulated sites using the same receiving device (although it is not recommended). The button isn't yellow for this fact – it can be assigned to multiple simulated sites.

4.2.2 Simulated Site Options Window

Diagram 13 – The options window is displayed below.
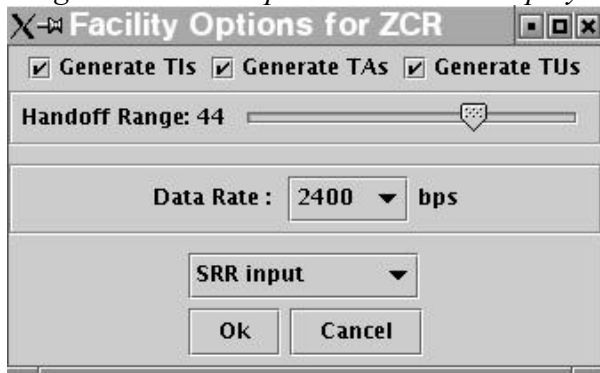
This small window represents options the user may set the simulated site to use for hand off messages. Each simulated site contains its own set of options and altering them affects only that facility. For the options to take effect on the rbxs there **must** be a rbx device assigned to the simulated site. The options on the display are defined below:

1- Generate TIs – if checked the simulated site will automatically generate TI (Transfer Initiate) messages to the rbx sites it communicates with as they reach the hand off range.
2- Generate TAs – if checked the simulated site will automatically generate TA (Transfer Accept) messages as it receives TIs from the rbx sites it communicates with.
3- Generate TUs – if checked the simulated site will automatically generate TU (Transfer Update) messages to the rbx sites it communicates with.
4- Handoff Range – dictates the range (in nautical miles) where the TI and TA messages are automatically handled by the rbxs.
5- Data Rate – the baud rate of the data allowed into the simulated site. <blah I need a better explanation of this feature.
6- Input type – the type of input the rbx device assigned to this simulated site should expect. If long range radar will be fed into the device then the value should be set to LRR input. If short range radar will be fed into the device then the value should be set to SRR input.

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4.3 *Rbx Arts/Host Display*

The features which make up a rbx Arts/Host can be broken into three parts –

1- Interfacility Type – this is the type of interfacility the simulated site is: either an Arts, or a Host site. This information is displayed in similar words below the 'rbx site' part.
2- Interfacility ID – this is the unique three letter identifier for the facility.
3- RbxDev – This button displays the currently assigned rbx device the rbx site will use (or is currently using) to simulate the remote interfacility. Pressing the button will cause the rbx control to query any machines located at the displayed host address for rbx hosts – displaying a list of any found at the IP address along with any devices usable as interfacility transmitters. The user may select a rbx device from the GUI and assign it to the selected rbx site.   When the user has done so the RbxDev button will indicate which rbx device has been assigned to it. The window displayed to enable this is detailed below:

4.3.1 Interfacility Transmitter Device Window

The GUI displays the rbx devices found at the host address: cards designated to simulate an interfacility transmitter. The "hosts" (machines containing these devices) can be seen on the left hand side of the panel. (Example: rbx1). The devices themselves are displayed as selectable buttons on the display. (Example: rbx1-1, rbx1-4 and so on). Selecting a device button represents the action of assigning that rbx device to the selected rbx site within the rbx control.

Diagram 14 –The Rbx Site Transmitter Display can be seen on the next page.. Note that one of the device buttons is yellow? This means that the device has been assigned to a rbx site in the interfacility control (see below).

Colors on the rbx site transmitter display

The buttons also have several colors, as can be seen in the above illustrations. Each color has a different meaning, as seen below:

1   Gray – means "unassigned". The rbx device is currently not assigned to any rbx site, nor is it in use by another process on the actual rbx (at the time of the query).

2   Yellow – means "assigned". The rbx device is assigned to a rbx site within the rbx control, but has not been initialized to simulate an interfacility site yet. The device will not allow more then one rbx site to have access to the rbx device it represents. If a different device needs to be assigned to the selected rbx site simply press a different device button to do so. If a different radar needs the assigned device select the rbx site which currently is assigned the rbx device, select clear from the state display below the interfacility list, and make the assignment to the desired rbx site.

3   Green – means the rbx device is currently in use on the actually rbx. A 'owner' will also be present indicating the process number used to open the rbx site. The device button will not allow the device it represents to be assigned to another rbx site until the device is closed.

4.4   Interfacility States

Since the rbx and simulated sites have slightly different criteria for their states they are explained separately below.

4.4.1 Rbx Arts/Host

1- Red – indicates that the rbx site is not ready to be opened for simulation; it has no rbx device assigned to it.

2- Yellow – indicates that the rbx site is ready to be opened; it has a rbx device assigned to it, but that rbx device has not been initialized with a rbx site representation yet.

3- Green – indicates the interfacility has been opened, and that the rbx device assigned to it has initialized with this rbx sites representation.

Diagram 15 – the interfacility control states can be seen below –
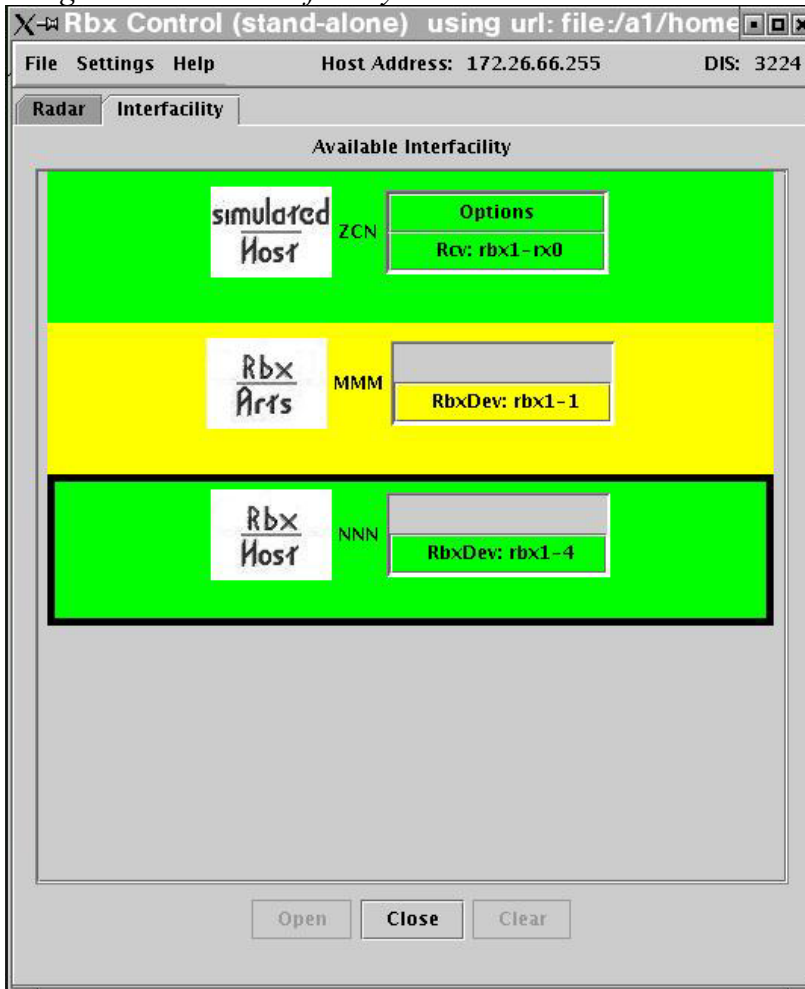
4.4.2 Simulated Arts/Host

1- Red – indicates that the simulated site does not have **rbx site** which is ready to be opened for simulation; none of the rbx sites it communicates with has a rbx device assigned to it.

2- Yellow – indicates that the simulated site has a rbx **site** which is ready to be opened for simulation; thus the interfacility communication can be established.

3- Green – indicates that the interfacility has been opened.

4.5 Interfacility State Buttons

On the bottom of the interfacility control there are three buttons used to change the state of the displayed interfacility, they have different functions depending on if a simulated or rbx site is selected.

1- Open – If the simulated site is opened with it then it and all ready to be opened (yellow) rbx sites are opened (initialized). If a rbx site is selected then only that rbx site and the simulated site are opened. If a selected rbx site does not have a rbx device or the simulated site does not have a ready rbx site, then the button will not be enabled.

2- Close – *At the time of this writing pressing close closes ALL open rbx sites associated with a simulated site, no matter if a simulated or rbx site is selected when the button is pressed.*

3- Clear – removes the assigned rbx device from the selected simulated or rbx site. If there is no assigned rbx device on the selected simulated/rbx site the button will not be enabled.

5   Troubleshooting

Yes, it is true despite what you may have heard: troubles *do* appear in the Rbx Control from time to time. A listing of the problems the Rbx Control can have can be found here. I've broken this section into different fragments.

5.1   General -

Loading radar and interfacility problems:
It may be possible that a radar or interfacility file does not load properly into the rbx control. Reasons this could occur are below:

1- *There are no radar or interfacility definitions in the xml file.* It's possible that the .xml file being read in doesn't contain any radar or interfacility sites within it. Ensure that the file is a radar or interfacility file and that you are using the correct loader (load radar or load facility) to load them into the Rbx Control.
2- *The radar or interfacility definitions in the file do not match the radar or interfacility .xsd files used to load them.* Different versions of the Rbx Control need different .xsd files. These files define the radar or interfacility files representation; radar or interfacility which do not match this representation can not be loaded (safely) into the Rbx Control. If a required field fails to be found within a radar or interfacility definition, that radar will not be added, and if all the radar or interfacility contained therein do not match, none will be added. The .xsd files can be found in the /tgf/xml/radar and /tgf/xml/facility directories contain the currently used .xsd files used to validate radar and interfacility data to the Rbx Control.
3- *The file may be protected.* In certain rare cases the file can not be read in due to the permissions set on it. Make sure the file can be read by the Rbx Control!

Loading configuration problems:
It may be possible that a configuration file does not load properly into the rbx control. Configuration files are susceptible to all the radar/interfacility problems above, but have additional issues if they do not load correctly:

1- *The radars/interfacility loaded with the configuration don't match what I had saved.* Either the wrong configuration file was loaded, or the radar/interfacility xml file the rbx control used had its representation changed. (Radar/interfacility renamed, a new radar xml file saved over the old, etc). The Rbx Control saves a URL to the radar and interfacility files which contained the current radar/interfacility representations in the rbx control GUI at the time the configuration was saved. If these files are deleted, or altered the changes may affect how the configuration is loaded.   The files the rbx control will use for this purpose can be seen by selecting the radar or interfacility tab and seeing what is displayed on the title.

     To avoid configuration problems make sure that you always save a new radar xml file if any radars or interfacility are added or deleted from the list of radars the rbx control uses.

5.2 Radar Specific

Opening radar problems.
Odds are that the radar may have difficulty opening, possible reasons are below:
  1- *Ensure the DIS port used to open the radar is acceptable to the rbxs.* A list of legal ports to legal rbx addresses is below:

DIS PORT to Use	Legal host addresses
3201 – 3208, 3221 – 3240	172.26.66.255
3209 – 3212	172.26.157.255

  2- *Ensure that the device is not already in use by another process.* There can be only one process per rbx device. It's *possible* that the device may have been claimed by another process just as you were about to use it, to check query the rbx host again (press the RbxDev button) and see if the device button has an owner associated with it.
  3- *Ensure that if using a weather or surveillance file that it exists on that rbx.* Certain weather and surveillance files are present on certain rbx hosts. Trying to use a file on a host which doesn't have it will cause the open attempt to fail. The culprit here may be the phl.srv file, which is only on rbx1.
  4- *Ensure the device did not time out.* There will be an error message displayed if the device the rbx control tried to reach timed out. If this is the case try again, or pick another rbx device.

Displaying radar problems.
Sometimes pressing the 'RbxDev' button to query the rbx hosts reveals nothing. If this occurs a panel looking like this will appear:

Diagram 16 –Not good if you see this:

Make sure the network isn't filtering packets so the query can reach the rbxs and the response it sends is seen by the rbx control. (See your network administrator for this.)

Radar Data problems.
The amount of problems with an actual radar are too numerous to list in this modest document, but some of the problems I have seen occur are documented here along with possible causes.
  1- *Radar are showing double targets.* This will resemble one target directly on top of another causing the image to be blurred on the controllers screen. The cause of this annoyance is the defined sweep rate in the radar xml file. Odds are good that the radar is defined as having a sweep rate of 4.4 seconds or lower – to correct the problem increase the sweep rate to 4.67 or higher.

2- *Flights are coasting where they shouldn't be; too soon or too late.* This problem may be related to the Slant Range definition in the radar xml file. Check to make sure that enroute radars (ARSR and RSE types) have a range which represents their scopes. (Usually greater than 100). Terminal radars should have a much smaller scope. (64 miles is the default for terminal radars.)

3- *The tracks aren't tagging up where expected.* This is may be due to a conflict in the magnetic declination or range/azimuth deviations associated with the radar. They may be missing (as they are not required) or incorrectly defined in the radar xml file used to represent the radar. If they are incorrect simply make the adjustments, if they are missing contact Tim Swantek at (609)-485-4192 to correct the problem. *The Rbx Control will soon have a schema editor associated with it to add these values and alter other ones at will, when it does so it will be reflected here.*

4- *There isn't any radar data.* Make sure the proper bytex scripts and network connections have been done on the rbx – the rbx control does not connect the rbx to the controller display labs. Make sure the DIS port you are using is also the one expected by the rbxs and labs configuration.

5- *There *was* radar data, but it ended suddenly.* It's possible that another process (i.e.: a dumb putz) came along and took the rbx device you were using from you by executing various term commands on the bytex. Checking to verify this is the problem requires you being logged onto the rbx you were using. Run a 'monitor' command on the rbx to see if the device is still 'owned' by the Rbx Control. (The rbx devices will list a 'owner' on the left side: it should match the last two digits of the DIS port you are using.

5.3   Interfacility Specific

Opening interfacility problems.
If the interfacility device associated with a rbx Site does not open properly (or at all) there are several things the user can check…

1- *Ensure the DIS port used to open the interfacility is acceptable to the rbxs.* A list of legal ports to legal rbx addresses is below:

DIS PORT to Use	Legal host addresses
3201 – 3208, 3221 – 3240	172.26.66.255
3209 – 3212	172.26.157.255

2- *Ensure that the device is not already in use by another process.* There can be only one process per rbx device. It's *possible* that the device may have been claimed by another process just as you were about to use it, to check query the rbx host again (press the RbxDev button) and see if the device button has an owner associated with it.

3- *Ensure the device did not time out.* There will be an error message displayed if the device the rbx control tried to reach timed out. If this is the case try again, or pick another rbx device.

4- *Ensure that the receiver device is not in use by another process.* If the simulated site had a rbx device assigned to it another process may have been vying for possession of it during the open attempt. There isn't really an easy way to circumvent this problem (if it is it), to check you must be logged into the rbx you were using. Check the status of the rbx device via a 'monitor' command, and if a process number is present then this was the problem. Kill the process to free the device.

5- *Only one open message per DIS port for interfacility.* If you already have opened an interfacility site through the rbx control another open message can not be sent to the interfacility rbx device on the same port. If you want to have additional rbx sites opened (and you have an open simulated site already) you must close t he current interfacility communication line (close the site), and then open it again with the newly assigned device.

Displaying interfacility problems.

Establishing interfacility communication between labs is crucial for terminal simulations where planes are being handed off to different sectors of airspace. Several problems can occur depending on the lab the rbxs are attempting to connect too. As with the radar, problems between labs can be quite time consuming and annoying, but commonly seen problems are pointed out here along with possible fixes. (To come later – next draft.)